USSR

NARKEVICH, I. I.

"Closure of Integral-Differential Equations for Multiple-Frequency Correlative Functions with the Aid of Mean Potentials"

Izv. AN BSSR. Ser. Fiz.-Mat. N. [News of Academy of Sciences, BSSR, Physics-Mathematical Science Series], 1973, No 3, 110-112 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V187)

Translation: The initial system of integral-differential equations for the correlative functions of conditional distributions are reduced to a system of integral equations for the mean potentials of a paired interaction with a given configuration of an arbitrary group of particles. Using an approximation for the mean potential justified for condensed molecular systems, the system produced is closed at any level using a single plan. The closed integral equation produced can be used to develop an iterational procedure for calculation of correlative functions for an arbitrary number of variables by computer.
                                                        Authors' view

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USSR

UDC 548.526+536.425

KRITSKAYA, V. K., and MARKHOV, A. V., Institute of Metallography and Metal Physics, TsNIIChM imeni I. P. Bardin

"Anomalous Behavior of Carbon Atoms at Low Temperatures in Electron-Irradiated Martensite"

Abstract: A study of the anomalous behavior of carbon atoms at low temperatures in electron-irradiated martensite is presented. It is shown that the degree of tetragonality of the martensite lattice decreases sharply after irradiation and cooling for 1 min in the temperature interval -40 to -50°. The observed phenomenon of low-temperature change of the parameter of the martensite lattice of carbon steel is not related to the change of the concentration of carbon in the solid solution, but is due to the redistribution of carbon in the lattice of the solid solution -- discontinuous transition of carbon atoms from octahedral pores, distributed along the tetragonal axis c, into defects produced by irradiation. The presence, in the lattice of irradiated martensite, of a fairly large quantity of pinholes, stimulates the transition of atoms from one position of the lattice to others which are more favorable from an energy standpoint. The authors thank Academician G. V. Kurdyumov and A. G. Khachaturyan for their interest in the work and for discussing the results, and L. I. Ivanov and L. N. Bystrov for permitting the irradiation of the specimens.
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USSR

UDC 629.7.036.54-66:536.46

IVANOV, B. I., IZMAYLOV, YE. M., NARKUNSKIY, S. YE., NIKONOV, A. P., and
PLESHAKOV, V. F.

"Limit Conditions for the Propagation of Combustion Along Metal Specimens in
Gaseous Oxygen"

Moscow, Goreniye i Vzryv -- Sbornik (Combustion and Explosion -- Collection of
Works), Nauka, 1972, pp 148-152 (from Referativnyy Zhurnal -- Aviatsionnyye i
Raketnyye Dvigateli, No 2, 1973, Abstract No 2.34. 148. Resume)

Translation: Measurements are made of the propagation rate of combustion and
the minimum oxygen pressure at which the propagation of combustion takes place,
for cylindrical specimens of steels Kh18N9T and 3Kh13, copper-containing iron,
and low-carbon steel. The oxygen pressure was varied from 1 to 400 technical
atmospheres, the velocity of the external stream of oxygen was varied from 0 to
100 m/sec, the diameter of the specimen varied between 1.2 and 6.0 mm. The
experimental data are in good agreement with a model in which combustion on the
surface of a liquid drop of metal is controlled by the diffusion of oxygen
through a gas, and confirms the assumption of independence of the limit (minimum)

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USSR

IVANOV, B. I., et al., Goreniye i Vzryv -- Sbornik, Nauka, 1972, pp 148-152
(from Referativnyy Zhurnal -- Aviatsionnyye i Raketnyye Dvigateli, No 2, 1973,
Abstract No 2.34. 148. Resume)

density of the heat flux required for the maintenance of combustion from the
pressure, the specimen diameter, and the velocity of the gas stream. 4 figures.
6 references.

2/2

1/2   011
TITLE--NEW PHASES OF ANALYZING AROMATIC HYDROCARBONS BY GAS LIQUID
    CHROMATOGRAPHY -U-

UNCLASSIFIED   PROCESSING DATE--04DEC70

AUTHOR-(02)-NARMETOVA, G.R., RYABOVA, N.D.

COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970. 14(1), 29-30

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AROMATIC HYDROCARBON, PETROLEUM REFINERY, SILICA GEL, ZEOLITE,
    CHROMATOGRAPHIC ANALYSIS/(U)KSK SILICA GEL, (U)INZ600 SOLID CARRIER,
    (U)CAX ZEOLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0320

STEP NO--UR/0291/70/014/001/0029/0030

CIRC ACCESSION NO--AP0137425

UNCLASSIFIED

CIRC ACCESSION NO--AP0137425
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A HIGH BOILING (B.P. SIMILAR TO
  500DEGREES) MIXT. OF AROMATIC HYDROCARBONS WAS ISOLATED FROM A PHENOLIC
  EXT. FROM THE FERGANSK REFINERY. IT IS A CLEAR, VISCOUS, CHERRY RED
  OIL, D PRIME20 SUB4 EQUALS 0.987) SUBR N PRIME20 SUBD EQUALS 1.5783 AND
  MOL. ST. 312. ZEOLITE CAX ABSORBS 22PERCENT AROMATIC HYDROCARBONS, NAX
  24PERCENT AND SILICA GEL KSK 52PERCENT. THE SOLID CARRIER INZ-600
  (0.25-0.5 MM, CALCINED 5 HR AT 500DEGREES) WAS IMPREGNATED WITH
  10PERCENT OF THIS OIL. TWENTY TWO AROMATIC HYDROCARBONS, B.P.
  80-270DEGREES, WERE WELL SEPD. ON A 2-M BY 4 MM COLUMN AT 120 AND
  200DEGREES, INJECTION BLOCK AT 220 AND 300 DEGREES, WITH 90 ML N-MIN AS
  CARRIER GAS. GOOD RESULTS WERE ALSO OBTAINED WITH 1PERCENT OIL ON HCL
  TREATED SAND, CALCINED AT 500DEGREES.   FACILITY: INST. KHIM.,
  TASHKENT, USSR.

1/2   016   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--EXCITED 0 PLUS LEVEL OF ALPHA PARTICLE --U-

AUTHOR--NARODETSKIY, I.M.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETT. B 1970, 31(3), 143-5

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ALPHA PARTICLE, EXCITED STATE, CALCULATION, INTEGRAL EQUATION,
MATRIX FUNCTION, NUCLEAR BINDING ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1468   STEP NO--NE/0000/70/031/003/0143/0145

CIRC ACCESSION NO--AP0101554
                    UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0101554   PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXCITED STATES OF THE ALPHA
PARTICLE ARE CALCD. BY USING THE 4 PARTICLE FADDEEV YAKUBOVSKY INTEGRAL
EQUATIONS (1967). THE 2 PARTICLE T MATRIXES FOR THE CLUSTER SEPN. 4
EQUALS 2 PLUS 2 ARE OMITTED SINCE, NEAR THE THRESHOLD OF ALPHA PARTICLE
DISINTEGRATION, THEY ARE SMALL COMPARED TO THE 3 PARTICLE T MATRIXES FOR
THE CLUSTER SEPN. 4 EQUALS 3 PLUS 1. THE 3 PARTICLE T MATRIXES ARE
APPROXIMATED BY THE POLE TERM. FOR THE EXCITED 0 PLUS LEVEL, THE CALCD.
BINDING ENERGY IS 18.408 MEV.   FACILITY: INST. THEOR. EXP.
PHYS., MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC 629.78:523.28

NARODETSKIY, M. Z.

"Some Problems in Calculating the Main Supports of Gyroscopic Devices"

Tr. Vses. N-i. Konstrukt. Tekhnol. In-ta Podshipnik. Prom-sti, [Works of
All-Union Scientific Research, Design and Technological Institute of the
Bearing Industry], 1971, No 3, (67), pp 3-19.   (Translated from Referativnyy
Zhurnal Raketostroyeniye, No 1, 1972, Abstract No 1.41.220 from the resume).

Translation: Formulas are produced for determination of the axial forces
acting on the main supports of gyroscopic devices with rigid and elastic
gyroscope elements, as well as formulas for determination of the maximum
permissible (critical) loads, at which one of the supports is fully unloaded.
Simple formulas are also produced for determination of the minimum necessary
preliminary interference of main supports of gyroscopic devices with rigid
and elastic elements. One pecularity of the formulas is that they consider
the rigidity not only of the bearings, but of the elements of the gyroscopic
devices connected to them as well. 4 tables.
1/1

USSR

NARODITSKIY, B. S., ULANOV, B. P., and TIKHONENKO, T. I., Institute of Virology
iment D. I. Ivanovskiy, Academy of Medical Sciences USSR, and Institute of
Chemical Physics, Academy of Sciences USSR

"Electron Microscopy of DNA of Bacteriophage SW That Lyses B. subtilis"

Abstract: Bacteriophage SW DNA was extracted with 4.5 M $NaClO_4$. The mean
length of the molecule was 66 microns, which corresponds to a molecular
weight of $130 \cdot 10^6$ daltons. A histogram of the distribution of DNA by molecu-
lar weight shows that the mean value of the molecular weight was $130 \pm 5 \cdot 10^6$
daltons. Besides molecules of this length, the preparation also contained
structures with a molecular weight of less than $20 \cdot 10^6$ and more than $130 \cdot 10^6$
daltons. However, there were no more than 5 percent of the former and 8 per-
cent of the latter. The presence of low-molecular fragments was probably caused
by mechanical rupture of the untreated molecules both during dilution of the
original solution and during its preparation. Structures with a molecular
weight of $150 \cdot 10^6$ daltons were probably formed as a result of the aggregation
of untreated molecules with low-molecular material.

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USSR

LOGINOVA, N. V., NARODITSKIY, B. S., and GAVRILOV, V. I., Institute of Virol-
ogy imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow

"A Simple Method for the Concentration of Tissue Culture Antigen of Japanese
Encephalitis"

Moscow, Voprosy Virusologii, B No 4, 1973, pp 494-496

UDC 576.858.25.097.2.083.3

Abstract: Tests were conducted on the feasibility of using polyethylene
glycol (PEG) to concentrate Japanese encephalitis (JBE) and West Nile Fever
viruses. The viruses were grown in chick embryo cells maintained in medium
199 containing 10% bovine serum. The culture fluid was centrifuged for 1 h
at 10,000 g at 4°C to remove cellular detritus. The pH of the supernatant
liquid was adjusted to 7.8 with sodium bicarbonate and NaCl was added to
0.5 M concentration. This was followed by the addition of 6,000 MW PEG to
8-9% and storage at 4°C for 1 to 24 h. Centrifugation for 1 h at 10,000 g
yielded a sediment which was dissolved in 1-2 ml borate buffer, pH 9.0,
containing 0.4% BSA and tested for hemagglutination. JBE was found to be
concentrated 50-70-fold after storage at 24 h; significant concentration
was also evident after 1 h. Concentration of West Nile virus was less ef-
fective and amounted to 8-16-fold concentration, presumably due to aggrega-
tion of the virus. PEG thus offers an easy method for concentrating JBE in
tissue culture supernatants.
1/1

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TITLE--ELECTRON MICROSCOPY OF THE DNA OF BACTERIOPHAGE SW LYSING
    B(ACILLUS) SUBTILIS -U-

UNCLASSIFIED   PROCESSING DATE--23OCT70

AUTHOR-(03)-NARODITSKIY, B.S., ULANOV, B.P., TIKHONENKO, T.I.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 187-9

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, BACTERIOPHAGE, BACILLUS SUBTILIS, ELECTRON MICROSCOPY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0021

STEP NO--UR/0217/70/015/001/0187/0189

CIRC ACCESSION NO--AP0105120

UNCLASSIFIED

CIRC ACCESSION NO--AP0105120

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DNA OF PHAGE SW WAS EXTD. WITH
4.5M NACLO SUB4 AND STUDIED BY ELECTRON MICROSCOPY.   THE MEAN VALUE FOR
THE LENGTH OF THE DNA MOL. WAS 65 MU, CORRESPONDING TO A MOL. WT. OF 130
TIMES 10 PRIME6 DALTONS.   FACILITY: O. I. IVANOVSKII INST.
VIROL., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 531.717.2.088

ALEKSANDROV, A. P., and NARODNITSKIY, G. YU.

"Errors in Measuring the Shape of Rough Surfaces, Using the Ranging Method and an Undirected Receiving and Emitting System"

Translation: One method of measuring the shape of rough moving surfaces is the ranging method, which consists of irradiating the surface with a pulse signal. The time function of the distance from the measuring system to the surface is then measured along a vertical; this shows the elevation of the surface at a point, as determined by the time lag of the return impulse. The return impulse's starting point is determined by the nearest point on the surface, which corresponds to the shortest emitter-surface-receiver path. In the general case, the distance to the nearest point does not coincide with the distance along the vertical, and the difference between these distances is a function of time and the surface's shape that determines the error in measuring

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USSR

AIEKSANDROV, A. P., and NARODNITSKIY, G. YU., Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb, pp 212-213

the rough surface's shape and average level. If $z(x)$ is the function describing the shape of a two-dimensional rough surface, with x being the coordinate corresponding to the surface's direction of motion and z being the vertical coordinate that is calculated from the surface's average level, then the coordinate of the nearest point x can be found from the equation

$$\frac{\partial z(x)}{\partial x} = \frac{x_0 - x}{H + z(x)}$$

where x_0 = coordinate of the receiving and emitting system; H = vertical distance from the surface's average level to the receiving and emitting system. We obtain ΔL, the difference in the distances from the receiving and emitting system to the nearest point and to the point on the surface that is vertically above the system, from the equation

$$\Delta Y = [H+z(x_0)] - \sqrt{(x-x_0)^2 + (H+z(x))^2}.$$

The method described above is used to find errors in the measurement of the shape of two-dimensional sinusoidal and trochoidal surfaces, which are of interest in the solution of a number of oceanographic problems.

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USSR   UDC: 621.373.421.13(088.8)

NARODITSKIY, I. A., FROMBERG, E. M., KUZNETSOV, V. A.

"A Device for Regulating Temperature"

USSR Author's Certificate No 286368, filed 17 Mar 69, published 12 Jan 71
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D352 P)

Translation: A temperature controller is proposed which contains a tem-
perature pickup, converter, pulse-duration modulator, and power amplifier.
In order to obtain high long-term temperature stability, the device includes
a self-excited oscillator with precision quartz resonator, and a self-
-excited oscillator with a quartz temperature resonator. These self-
-excited oscillators are connected through a mixer to the input of the
discriminator. V. P.

1/1

USSR

KISELEV, A. M., LEZHEBOKOV, I. I., NAROYCHIK, S. S., NIKOLAYEV, A. A., OSOVSKIY, M. O., SELIVANOV, P. YA., SHKLYAREVSKIY, V. K.

"Procedure for Automatic Regulation of the Process of Noncrucible Zone Melting"

Translation: A procedure is introduced for automatic regulation of the process of noncrucible zone melting by keeping the ingot diameter constant by means of a signal received as a result of measuring the effect of the projection of the zone on a photoreceiver for controlling the ingot diameter. To improve accuracy of regulation, a profile of the zone located directly on the crystallization front is projected on the photoreceiver for controlling the diameter of the ingot by means of a crystallization-front tracking system.

1/1

1/2   020   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--KINETICS OF THE INHIBITION OF TRYPSIN ACTIVITY BY A HEAT AND ACID
  STABLE INHIBITOR FROM RABBIT SERUM -U-
AUTHOR-(02)-NARTIKOVA, V.F., PASKHINA, T.S.

COUNTRY OF INFO--USSR

SOURCE--BIOKHIMIYA 1970, 35(1), 187-95

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TRYPSIN, INHIBITION, RABBIT, BLOOD SERUM, ESTER, HYDROLYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0648   STEP NO--UR/0218/70/035/001/0137/0195

CIRC ACCESSION NO--AP0117874
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0117874
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A HEAT AND ACID STABLE TRYPSIN
  INHIBITOR PURIFIED 800 FOLD FROM RABBIT SERUM HAD A MOL. WT. OF SIMILAR
  TO 23,000.   THE PREPN. RAPIDLY INHIBITED THE TRYPSIN CATALYZED
  HYDROLYSIS OF N,BENZOYL,L,ARGININE ET ESTER (BAEE) AND
  N,BENZOYL,DL,ARGININE,P,NITROANILIDE (BAPA). THE DEGREE OF INHIBITION
  DID NOT INCREASE WITH INCREASING LENGTH OF PREINCUBATION WITH THE ENZYME
  IN THE RANGE 0.5-15 MIN. CHANGES IN THE PH FROM 2.0 TO 9.4 DURING
  PREINCUBATION AND FROM 6.0 TO 9.2 DURING THE REACTION DID NOT
  SIGNIFICANTLY AFFECT THE INTERACTION OF INHIBITOR WITH TRYPSIN.
  INHIBITION WAS COMPETITIVE WITH 0.0005M BAEE AS SUBSTRATE AND
  NONCOMPETITIVE WITH BAPA. IN THE LATTER CASE THE DEGREE OF INHIBITION
  DID NOT CHANGE WITH CHANGES IN BAPA CONCN. OVER THE RANGE 10 PRIME
  NEGATIVE3 MINUS 3 TIMES 10 PRIME NEGATIVE3 M. THE K SUBM FOR BAPA WAS
  8.3 TIMES 10 PRIME NEGATIVE4 M WITH TRYPSIN. THE K SUBI WAS SIMILAR TO
  6.0 TIMES 10 PRIME NEGATIVE8 M.   THE K SUBI VARIED INVERSELY WITH TEMP.
  IN THE RANGE 10-37DEGREES. AN INCREASE IN ENTROPY INDICATED CHANGES IN
  THE CONFORMATION OF TRYPSIN DURING INTERACTION WITH THE INHIBITOR.
     FACILITY: INST. BIOL. MED. CHEM., MOSCOW, USSR.

1/2   030   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--THE RELIABILITY OF TURBINE SET UPS IN VESSELS -U-

AUTHOR--NARTOV, I.M.

COUNTRY OF INFO--USSR

SOURCE--THE RELIABILITY OF TURBINE SET UPS IN VESSELS (NADEZHNOST'
   SUDOVYKH TURBINNYKH USTANOVOK) LENINGRAD. SUDOSTROYENIYE. 1970. 126 PP.
DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, METHODS AND EQUIPMENT

TOPIC TAGS--ENGINE RELIABILITY, MARINE ENGINE, TURBINE DESIGN, S AND T
   PUBLICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1259   STEP NO--UR/0000/70/000/000/000 /0126

CIRC ACCESSION NO--AM0130253
                      UNCLASSIFIED

CIRC ACCESSION NO--AM0130253
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: FROM THE
AUTHOR 3.   INTRODUCTION 5.   CHAPTER I. THE STATE AND TENDENCIES IN THE
DEVELOPMENT OF SHIP TURBINE OUTFITS 7.   II BREAKDOWNS IN SHIP TURBINE
OUTFITS 32.   III CRITERIA OF RELIABILITY AND COMPARATIVE EVALUATION OF
THE RELIABILITY OF THE DEVICES OS SHIP SUTBINE OUTFITS 71.   IV THE ROLE
OF MAINTAINANCE IN SECURING RELIABILITY OF SHIP TURBINE OUTFITS 116.
LITERATURE 126.   AN ATTEMPT IS MADE TO CLASSIFY THE CAUSES OF
EMERGENCE, NATURE AND PROCESSES OF DEVELOPMENT OF THE MOST TYPICAL
BREAKDOWNS IN SHIP TURBINE INSTALLATIONS. DESCRIBED ARE THE RESULTS OF
EXPERIMENTAL AND THEORETICAL INVESTIGATIONS DIRECTED TOWARD WORKING OUT
MEASURES TO PREVENT BREAKDOWNS. THE BOOK IS DESIGNED FOR TECHNICAL
ENGINEERS DESIGNING, MAKING, OPERATING AND INVESTIGATING THERMO
MECHANICAL EQUIPMENT.

UNCLASSIFIED

USSR

UDC 669.295.5'294

NARTOVA, T. T., and ANDREYEV, O. N., Moscow

"High-Temperature Strength and Elastic Properties of Ti-Ta Alloys"

Moscow, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 194-196

Abstract: This article contains a study of the effect of composition and phase structure of Ti-Ta alloys on their elastic characteristics, high-temperature strength, and density. The study was made using alloys with 40 atomic percent Ta (~72 weight %). The test procedures are described and the resultant data are presented and analyzed. It is noted that the modulus of normal elasticity and the modulus of rigidity of Ti-Ta alloys vary insignificantly as a function of composition (up to 30 atomic % Ta). The high-temperature strength of the alloys at 400-600°C increases as the tantalum content increases.

Microstructural investigation of annealed alloys demonstrated that the alloys containing up to 3.5 atomic % Ta have a polyhedral structure of the α-solid solutions. The microstructure of the alloy containing from 5 to 40 atomic % Ta consists of a mixture of (α + β)-phases. Alloys with 40 atomic % Ta and higher reveal a single-phase structure of the β-solid solutions. The microstructure of the alloys did not change, in practice, after the high-temperature strength testing.

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USSR

NARTOVA, T. T., and ANDREYEV, O. N., Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 194-196

In the equilibrium state the Young's modulus and modulus of rigidity of the alloys decrease monotonically as the tantalum content in the alloys increases. In the two-phase region, the elastic characteristics vary insignificantly. The high-temperature strength of the alloys was studied at 400°C for 1,300 hours, at 500°C for 1,000 hours, and at 600°C for 10 hours. From creep studies by the centrifugal method, composition--high-temperature strength diagrams were constructed indicating the dependence of the time of achieving a given bending deflection on the composition by comparison with the phase structure of the alloys of this system. At a test temperature of 400°C the high-temperature strength of Ti-Ta alloys increases within the limits of the -solid solution, and the alloys near the boundary of the $a/(a+\beta)$ regions have an insignificant maximum high-temperature strength. Then the high-temperature strength of the alloys increases as the tantalum content increases.

Increasing the test temperature to $500-600^\circ$C caused a reduction in high-temperature strength of the alloys. This variation of high-temperature strength of the alloys as a function of composition and phase structure in diagrams of state of the second type is explained by the solution mechanism of hardening of the alloys in the a and β-solid solution domain.

2/2

Titanium

USSR

UDC 669.295.5'71'292

ANDREYEV, O. N., NARTOVA, T. T., and KORNILOV, I. I., Moscow

"Phase Structure and Thermal Stability of Ti$_3$Al-V-System Alloys"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 3, May-Jun 71, pp 206-209

Abstract: Results are presented of an investigation of phase equilibrium and thermal stability of ternary Ti-Al-V system alloys along the radial Ti$_3$A-V section. The preparation of samples and subsequent heat treatments are described. Thermal differential and microstructural analyses were used. The hardness, specific electrical resistance and density of alloys were measured, and the thermal stability of alloys was studied with respect to their composition. The results are presented in the form of microstructures, phase equilibrium diagrams, variation of specific electrical resistance and hardness with vanadium content, dependence of sag on deformation time, and dependence of thermal stability on composition. The results show that, in a given section, vanadium reduces the phase transformation temperature in solid state alloys.

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USSR

ANDREYEV, O. N., et al., Izvestiya Akademii Nauk SSSR, Metally, No 3, May-Jun 71, pp 206-209

Alloys near the transition boundary $\alpha_2(\alpha_2 + \beta)$ are the most thermally stable, while from the vanadium side of the section, the alloy with 85% V is the most stable in the section β region. The character of chemical interaction along the Ti_3Al-V section is confirmed by the study of the content vs property (HV, ρ) diagram.

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USSR

UDC 669.295.5'27

OLEYNIKOVA, S. V., NARTOVA, T. T., and KORNILOV, I. I., Moscow

"Structure and Properties of Ti-W System Alloys with High Titanium Content"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 3, May-Jun 71, pp 192-196

Abstract: The structure and properties of Ti-W alloys with up to 8at% W (25wt%) were investigated. Titanium iodide and a Ti-W alloy containing 7.9at% W were used as initial materials from which samples were prepared. The phase equilibrium was studied by methods of microstructural, thermal differential, and phase roentgen analyses, as well as by optic pyrometer. The thermal stability was studied by the method of centrifugal bending. Hardness measurement (on a Vickers apparatus with a 10-kg load) and specific electrical resistance showed the linear dependence on tungsten content. The investigations confirmed a eutectoid-type of titanium-rich region of the Ti-W system phase diagram. The temperature of the eutectoid transformation in the system was determined on the basis of thermal analysis. The established character of the chemical interaction in the Ti-W system was confirmed by investigations of hardness, specific electrical resistance, and thermal stability with respect to composition.

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1/2   033

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--PHASE EQUILIBRIUM AND HEAT RESISTANCE OF TI RZ AL ALLOYS -U-

AUTHOR-(02)-NARTOVA, T.T., SHIROKOVA, N.I.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, METALLY, MAY-JUNE 1970, P. 194-198

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TITANIUM ALLOY, ZIRCONIUM CONTAINING ALLOY, ALUMINUM
CONTAINING ALLOY, HEAT RESISTANCE, SOLID SOLUTION, BIBLIOGRAPHY, METAL
CREEP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605008/C10 STEP NO---UR/0370/70/000/000/0194/0198

CIRC ACCESSION NO--AP0139963
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0139963   PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   EXPERIMENTAL INVESTIGATION OF THE
    PHASE EQUILIBRIUM AND HEAT RESISTANCE OF THE PROTION OF THE TI-ZR-AL
    SYSTEM ADJACENT TO THE TITANIUM RICH CORNER. A POLYTHERMAL CROSS
    SECTION PARALLEL TO THE TI-TI3AL-ZR EDGE IS CONSTRUCTED THERMAL
    DIFFERENTIAL, MICROSTRUCTURAL, AND X RAY ANALYSIS.   THIS CROSS SECTION
    IS FOUND TO HAVE THE SAME INTERACTION CHARACTERISTICS AS THE TI-AL
    SYSTEM. AN ISOTHERMAL CROSS SECTION OF THE TI-TI3AL-ZR SYSTEM OBTAINED
    AT 500 DEG C REVEALS THE PRESENCE OF A LARGE SINGLE PHASE REGION OF A
    TITANIUM, ZIRCONIUM, AND ALUMINUM SOLID SOLUTION IN A NARROW TWO PHASE
    ALPHA PLUS ALPHA 2 REGION ADJACENT TO THE TI-TI3AL EDGE. CREEP TESTS AT
    700 DEG C AND STRESSES OF 20 KG-SQ MM SHOWED AN ALLOY CONTAINING
    86PERCENT, TI 9PERCENT AL, AND 5PERCENT ZR EXHIBITS THE HIGHEST CREEP
    RESISTANCE. SHORT TIME TENSILE TESTS OF THIS ALLOY SHOWED THAT ITS
    TENSILE STRENGTH AT ROOM TEMPERATURE IS ROUGHLY 100 KG-SQ MM, AND 80 AND
    50 KG-SQ MM AT TEMPERATURES OF 700 AND 800 DEG C, RESPECTIVELY.

N

USSR

UDC 669.295.5

KORNILOV, I. I., NARTOVA, T. T., and SHIROKOVA, N. I., Moscow

"The Effect of Zirconium and Aluminum on the Structure and Properties of Ti3Sn"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul-Aug 70, pp 174-177

Abstract: The effect of zirconium and aluminum on the phase equilibrium and properties of Ti3Sn was investigated on the basis of two polythermal sections coming from the composition of the compound Ti3Sn in the systems Ti-Zr-Sn and Ti-Zr-Al-Sn. The investigation was carried out by differential thermal and microstructure analyses and measurements of hardness, electrical resistance, and density. The microstructures and polythermal section curves of the two systems are shown and their characteristics outlined. The established character of the chemical interaction of components of the investigated sections is confirmed by the regularity in the variation of properties of the alloys in dependence on structure and chemical composition.

1/1

N   UDC 669.295'3:539.34

USSR

ZUYKOVA, N. A., KORNILOV, I. I., and NARTOVA, T. T., Institute of Metallurgy imeni A. A. Baykov

"Heat Resistance of Ti-Cu Alloys"

Moscow, Metallovedeniye, No 5, May 70, pp 53-54

Abstract: A study was made of heat resistance of Ti-Cu alloys in the forged, cast, and annealed states is a function of composition and of the mechanical properties of the forged metal as a function of composition at room temperature and at 400°C.
    Experimental ingots weighing 500 g were produced using TG-110 sponge titanium and electrolytic copper. Each batch was remelted four times in a vacuum-arc furnace using a nonconsumable electrode in an argon atmosphere. The purified ingots were cut into three sections and forged at 950°C into 7- and 12-mm rods.
    Heat resistance was studied by heating the samples at 400°C under a 20-kg/mm² load and noting the time it took to reach a specific degree of bending. The heat resistance-composition curve passes through a threshold maximum at 1.6-2.0% Cu, which corresponds to alloys whose composition is near the boundary of maximum solubility of copper in alpha-Ti at the eutectoid temperature with a small excess of the Ti₃Cu phase. Cast alloys subjected to the same processing did not achieve equilibrium. Ti-Cu alloys with 2.25 at % Cu have minimum heat resistance, which

1/2

USSR

ZUYKOVA, N. A., et al., Metallovedeniye, No 5, May 70, pp 53-54

is explained by the dissolving-precipitating mechanism of recrystallization. At 2.5 at % Cu, heat resistance gradually increases as Cu content is increased to 5.5 at % Cu, as the result of the influence of the formed Ti_3Cu phase. Maximum heat resistance was observed in those alloys containing 0.8-1.4 at % Cu. In this composition range, at 400°C, tensile strength ranges from 38-45 kg/mm^2, while elongation ranges from 13.5 to 15.0%.

2/2

N

USSR   UDC 669.295.5'296'71

NARTOVA, T. T., and SHIROKOVA, N. I.

"Phase Equilibrium and Heat Resistance of Ti-Zr-Al Alloys"

Moscow, Izvestiya AN SSSR, Metally, No 3, May-Jun 70, pp 194-198

Abstract: The results are presented of an investigation of the phase equilibrium
and properties of alloys whose polythermal sections are parallel to the Ti-Ti$_3$Al
side, with a constant 5 wt % content of Zr and with an isothermal section at
500° C. Alloys for phase equilibrium study were produced by the induction method
of noncrucible melting in suspension in a purified helium atmosphere. The experi-
mental technique is breifly described. The polythermal section parallel to the
Ti-Ti$_3$Al side was constructed using the methods of differential thermal, micro-
structure, and X-ray analyses (on a high-temperature vacuum facility of the
Academy of Sciences UkrSSR). Creep tests were conducted by the centrifugal
__tion method at 700°C and 20 kg/mm^2 stress along two sections: one parallel to
the Ti-Al side and the other parallel to the Ti-Zr side. The results show that
the constructed polythermal section, parallel to Ti-Ti$_3$Al with a constant 5 wt %
Zr content is similar to the Ti-Al system. The constructed isothermic section of
Ti-Ti$_3$Al-Zr at 500° contains a large single-phase region of solid solution of

1/2

USSR

NARTOVA, T. T. and SHIROKOVA, N. I., Izvestiya AN SSSR, Metally, No 3, May-Jun 70, pp 194-198

Ti, Zr, and Al, and a narrow two-phase region $(\alpha + \alpha_2)$ adjacent to the Ti-Ti$_3$Al side. The maximum creep resistance is obtained with an 86% Ti, 9% Al, and 5% Zr alloy. Its tensile strengths at room temperature, 700°C, and 800°C are 100, 80, and 50 kg/mm^2, respectively.

2/2

1/2   031
TITLE--STUDY OF THE PHASE STRUCTURE OF ALLOYS IN THE SYSTEM TI3AL-NB -U-

UNCLASSIFIED

PROCESSING DATE--11SEP70

AUTHOR--NARTOVA, T.T., SOPOCHKIN, G.G.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, METALLY, MAR. APR. 1970, P. 220-223

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALLOY PHASE SYSTEM, PHASE STRUCTURE, METAL MICROSTRUCTURE, X RAY ANALYSIS, TITANIUM ALLOY, ALUMINUM ALLOY, NIOBIUM ALLOY/(U)TINBTI3AL ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0340

STEP NO--UR/0370/70/000/000/0220/0223

CIRC ACCESSION NO--AP0108638

ZZZZZZZZZZZZ   UNCLASSIFIED

CIRC ACCESSION NO--AP0108638   UNCLASSIFIED   PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE PHASE EQUILIBRIA OF
ALLOYS IN THE QUASI TERNARY SYSTEM TI-NB-TI3AL, USING MICROSTRUCTURAL,
THERMOGRAPHIC, AND X RAY ANALYSES. IT IS FOUND THAT ALLOYS OF THIS
SYSTEM FORM CONTINUOUS SOLID SOLUTIONS BASED ON THE BETA SOLID SOLUTION
OF THE SYSTEM TI-AL AND NIOBIUM. ADDITIONS OF NIOBIUM TO THE COMPOUND
TI3AL RESULT IN A SUBSTANTIAL DECREASE OF THE TRANSFORMATION TEMPERATURE
IN THE SOLID STATE AND STABILIZE THE REGION OF THE BETA SOLID SOLUTION.

ZZZZZZZZZZZZZ   UNCLASSIFIED

THROMBOSIS OF MESENTERIC VEINS

T. V. Nartsissov, V. Ya. Vasyutkov, Z. M. Murashova

Problems relative to the diagnosis and treatment of obstruction of mesenteric vessels are the most complicated in emergency surgery of the abdominal cavity. On the basis of analysis of 13 observations of thrombosis of mesenteric veins the authors arrived at the conclusion that the high lethality and severity of this affection are associated with the diagnostic difficulties and late hospitalization of patients for the operation. The most typical symptoms of obstruction of mesenteric veins are given. An early operation (thrombectomy or resection of the intestine) is the main method of treatment. Early and wide employment of direct anticoagulants is indicated in view of the fact that progressing thrombosis and affection of the portal vein is the cause of lethal outcomes.

REEL/FRAME
19771713

USSR

UDC 621.791.856.31669.245

YELAGIN, V. M., MARTYUSHOV, B. I., and KOZLOVA, G. G., Moscow

"Statistical Analysis of the Effect of the Conditions of Argon-Arc Welding on the Mechanical Properties of Joints"

Kiev, Avtomaticheskaya Svarka, No 7, Jul 72, pp 13-17

Abstract: An analysis was made of the effect of the welding method on the strength of samples of welded joints tested for static strength by tension. The results are discussed by reference to tabulated data and diagrams showing the effects of welding current, welding rate, and welding arc voltage on the mechanical properties of joints of Kh18N9T steel and Kh18N9T steel joints with Kovar (Fe-Ni-Co-Mn alloy). The strength of Kovar joints welded by the argon-arc method was found to be lower and the relative elongation higher in comparison with the deformed initial metal. Some characteristics of welded joints of Kh18N9T steel with Kovar are indicated. A method is suggested for determining the optimum parameters of the argon-arc welding method and the acceptable deviations from these parameters. It is shown that the mean square deviation of the investigated properties from their average value is the most important characteristic of quality and reliability of argon-arc-welded joints. The variation coefficient of the properties can serve as a criterion for weld quality. Six illustrations, six formulas, three tables, three bibliographic references. 1/1

Instruments and Equipment

USSR

MIKHAYLOV, R. K., NARUZHNYY, B. V., and SINENKO, S. F., Leningrad "Krasnogvardeyets"
Plant

"Multichannel Electronic Diagnostic Apparatus"

Moscow, Meditsinskaya Tekhnika, No 6, 1970, pp 33-35

Abstract: A brief description is given of the following electronic apparatus now
under development at the Leningrad "Krasnogvardeyets" Plant, the country's oldest
manufacturer and designer of medical equipment: (i) Physiograph (model 068) cap-
able of simultaneous recording of electrocardiograms, phonocardiograms, pulse
rate, body temperature, oxyhemograms, tacho-oscillograms, and so forth; (ii) ELKAR
electrocardiograph with ink or thermal recording of electrocardiograms, based on
the modular-cassette principle, with attachments to permit pneumography, phono-
cardiography, and plethysmography, stethophone, and oscilloscope for observation
of the processes being recorded; (iii) Poligraf (model 071), incorporates the
features of many foreign diagnostic machines, with interchangeable units for re-
cording oxyhemograms, plethysmograms, pneumograms, sphygmograms, cardiodensigrams
to show total cardiac output), thermograms, pO_2, and pCO_2; (iv) bed monitors to
record arterial pressure, pulse rate, respiratory rate, and body temperature;

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USSR

MIKHAYLOV, R. K., et al, Meditsinskaya Tekhnika, No 6, 1970, pp 33-35

(v) devices for recording hemodynamic indices (an arterial oscillograph with photorecording is now in production).

2/2

Miscellaneous

USSR   UDC 621.762.012.5

KIPARISOV, S. S., NARVA, V. K., and BURYMOVA, T. M., Moscow Institute of Steel and Alloys; Chair of Rare, Radioactive Metals and Powder Metallurgy

"Production and Properties of Materials Using Titanium Carbide"

Abstract: Investigation results are presented of the production conditions and of the properties of materials incorporating TiC (30-80 wt%) and the bond of the Ni-Cr-Mo alloy. The hardness of the materials (30-80 wt% TiC) after aging and heat treatment, their mechanical properties at room temperature and at 800°, the increase in weight with oxidation, and the antifriction properties of the materials (30-50 wt% TiC) are discussed by reference to experimental data. Baked materials, containing titanium carbide and Ni alloy of complex composition, were found capable of being subjected to heat treatment, after which their hardness is 60-73 HRC. The materials retain high strength and hardness up to 500-550°, and they possess good wear resistance and high heat resistance at 600-1000°. Their oxidation proceeds according to the logarithmic rule. One figure, four tables, six bibliographic references.

1/1

USSR

KIPARISOV, S. S., NARVA, V. K., DALYAYEVA, L. I., and NAGORNYY, N. YU., Moscow
Institute of Steel and Alloys, Chair of Rare and Radioactive Metals and Powder
Metallurgy

UDC 621.762.4

"Investigation of the Process of Dross Molding of Titanium Carbide"

Abstract: Conditions are analyzed for production of highly porous billets
from titanium carbide by the method of injection molding of thermoplastic
drosses. The degree of porosity of the speciments (40-70%) was dictated by
their further use for producing materials of the ferro-TiC class by the impreg-
nation method and with a specified relationship of titanium carbide in steel.
Porous objects of titanium carbide were produced by injection molding of thermo-
plastic drosses according to the schema of mixing titanium carbide (screen
undersize) with the bond and the filler followed by injection molding, bond
distillation, filler separation, and sintering. The best bonds are 85%
paraffin and 15% wax and 91% paraffin, 6% wax, and 3% oleinic acid. Alcohol,
starch, and dextrin are recommended as fillers. The porosity of titanium
1/2

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USSR

KIPARISOV, S. S., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 3, 1973, pp 147-152

carbide samples produced by injection molding of thermoplastic drosses can be varied depending on the quantitative correlation of titanium carbide, the bond, and the filler, and also depending on the sinetering temperature of porous objects. Four figures, two table, six bibliographic references.

2/2

USSR

UDC 621.775.74

KIPARISOV, S. S., and NARVA, V. K., Moscow Institute of Steel and Alloys, Department of Rare Radioactive Metals and Powder Metallurgy

"Thermal Stability of Titanium Carbide-Steel Cermets"

Abstract: Results are presented of an investigation of the thermal stability of cermets based on titanium carbide and steel. The thermal stability of annealed and tempered TiC-Kh12M, Kh4N2M8 steel cermets and also of tempered TiC-Kh18Ni5 steel cermets, obtained by sintering powder materials in a 10^{-4} mm Hg vacuum, was studied at 600, 800 and 1000° for 32 hours by the gravimetric method. The results show that at 600 and 800° the cermets after tempering are more resistant to oxidation than after annealing. At 1000° no such difference was observed because the steel structure was the same after tempering and annealing. The thermal stability of TiC-Kh18H15 cermets is the highest, while that of TiC-Kh4N2M8 is the lowest. A metallographic study of the oxide film structure shows an inhomogeneity in structure
1/2

USSR

KIPARISOV, S. S., and NARVA, V. K., et al., Tsvetnaya
Metallurgiya, No 6, 1970, pp 120-123

which is explained by the inhomogeneity of the ferrous oxide
film. The increase in thermal stability is explained by the
formation of a sufficient amount of alloying metal oxides or
complex oxides in the scale.

2/2

USSR

NARVA, V. K., and KIPARISOV, S. S.

UDC 621.762.001:669.295'184'15

"Study of Conditions of Production and Some Properties of Metal Ceramic Materials Based on Titanium Carbide With Alloyed Steel Binder"

Tugoplavk. karbidy [Refractory Carbides -- collection of works], Kiev, Nauk. dumka Press, 1970, pp. 24-28 (Translated from Referativnyy Zhurnal-- Metallurgiya, No. 2, 1971, Abstract 2 G412 by the authors)

Translation: The conditions of production and certain properties of Ti carbide-alloyed steel materials are studied. It is demonstrated that the presence of the steel binder allows the HRC to be increased to 40 after annealing. 3 figures; 2 tables.

1/1

USSR

MEYERSON, G. A., KREYN, O. YE., KIPARISOV, S. S., and NARVA, V. K.,
Moscow Institute of Steel and Alloys

UDC 546.824'261

"Production of Titanium Carbide"

Moscow, Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy,
Vol 6, No 10, Oct 70, pp 1749-1752

Abstract: Equilibrium conditions for the reaction $TiO + 2C = TiC + CO$
are studied, as a result of which an equation is derived for the tem-
perature dependence of the equilibrium constant and optimum conditions
are determined for the production of titanium carbide with a composi-
tion close to the stoichiometric. A study was made of the conditions
for the production of titanium carbide at atmospheric pressure in an
argon stream in a coal tube furnace. It was found that an increase in
the argon flow rate corresponding to a decrease in the partial pressure
of the resultant CO shifts the reaction into the region of lower tem-
peratures. Titanium carbide with a composition close to stoichiometric
was obtained in the coal tube furnace at $1750°$ C in the argon stream,
as well as in a vacuum furnace at 1 mm Hg and $1700°$ C.

1/1

USSR

NARYSHKIN, A. K. and GERASIMOVA, T. I.

"Experimental Investigation of Noise in MOS Transistors"

Moscow, Radiotekhnika, No 10, 1972, pp 94-96

Abstract: This brief communication presents the noise character-
istics of MOS field-effect transistors with p-type channels in
the frequency range of 150 kHz to 5MHz at temperatures of -50 to
+60° C. The circuit of the experimental equipment, in which the
noise voltage level was measured by a selective microvoltmeter,
type V6-I, is reproduced. Curves are obtained for the spectral
density of the drain current noise as a function of the frequency
at 20° C for two values of gate voltage, from which it is seen that
there is a good deal of noise at the low frequencies and that this
noise is an order higher than the thermal noise of the channel.
The authors conclude that these transistors are characterized by
high qualitative and quantitative noise-characteristic variations
among individual specimens.

1/1

- 114 -

NARYSHKIN, S.P.

AUTOMATIC PYROMETER FOR MEASURING THE TRUE TEMPERATURE OF
METALS ON THE BASIS OF RADIATION

[Article by D. Ya. Svet, ...; ..., ..., Yu. G. Mirgun;
E. P. Naryshkin, Russian, pp 339-343, no further information available]

The most important problem in the pyrometry of radiation is the
measurement of the temperature of a body on the basis of radiation when the
radiating capacity of the body changes during measurement.

We know that the solution to this problem is subject to difficulties
of a theoretical nature and the only success that has been achieved thus far
in solving it has involved radiators whose surfaces exhibit diffuse or mirror
reflection that obeys the Lambert law. In these cases, the missing infor-
mation on radiating capacity is obtained from the additional flux of
radiant energy from a lateral source, reflected by the surface of the
radiator [1,2,7]. Polarization of the radiation from a metallic mirror was
used in [3,4,5] to obtain the missing information.

It has been shown [3,7] that within the limits of validity of the
Drnod formula the values for the true temperature can be determined by one
of the methods of pyrometry on the basis of the relative distribution of
spectral energy density of thermal radiation. However, the method can only
be used at a relatively low temperature range. It has also been shown [6,8,7]
that there are several new possibilities of measuring the true temperatures
with changing radiating capacity, based on acquisition of additional infor-
mation obtained directly from the flux of polychromatic radiation [6] on
the basis of a new form of distribution of spectral radiation of Wien-Planck
radiation [10].

It has been shown in there papers that although the values of the true
temperature and radiating capacity cannot be determined directly from the
value of the fluxes of intrinsic radiation, the view which is widely held in
optical pyrometry concerning the impossibility of estimating separately from
temperature the influence of the radiating capacity on the results of
measurements of the flux of the temperature radiation itself is not always
valid.

- 1 -

[I - USSR - L]

USSR

SOKOLOV, A. Ye., USANOV, A. P., SHAPIRO, A. Z., D'YACHKOV, V. K., KUTYAYKIN, V. Ya., MUROKH, G. L., MARYSHKOV, V. M.

UDC: 621.396.67:624.97(088.8)

"A Device for Suspending the Radiating Element of Rotating Antennas"

USSR Author's Certificate No 262198, filed 20 May 68, published 3 Jun 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B77 P)

Translation: This Author's Certificate introduces a device for suspending the radiating element of rotating antennas. The device contains a girder designed for fastening the radiating element, this girder being fastened to the reflector or antenna array by rod supports equipped with hinges. In order to reduce the effect which deformations of the elastic elements have on the electrical parameters of the antenna, the girder is connected to the rod supports through bearings, and to the reflector or antenna array through auxiliary guys, the lines which connect the points of fastening of these guys to the reflector or antenna array and to the girder forming a parallelo-gram. Two illustrations. Resumé.

1/1

- 15 -

USSR

UDC 621.395.67:624.074

SOKOLOV, A. Ye., USANOV, A. P., SHAPIRO, A. Z., D'YACHKOV, V. K., KUTYAYKIN, V. A.
MURCKH, G. L., NARYSHKOV, V. M.

"A Device for Suspension of the Primary Radiating Element of Rotating Antennas"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6,
1970, p 41, patent No 262198, filed 20 May 68

Abstract: This Author's Certificate introduces a device for suspension of the
primary radiating element of a rotating antenna. The unit contains a girder
designed for holding the radiating element. This girder is fastened to the
reflector or antenna array by means of rod supports equipped with hinges. As a
distinguishing feature of the patent, the effect which deformations of the elastic
elements in the device have on the electrical properties of the antenna is reduced
by connecting the girder to the rod supports by means of bearings, and connecting
it to the reflector or antenna array by means of additional guys. The connection
lines of the points of fastening of the guys to the reflector or antenna array and
to the girder form parallelograms.

1/2

USSR

SOKOLOV, A. Ye., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy,
Tovarnyye Znaki, No 6, 1970, p 41, patent No 262198, filed 20 May 68

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- 4 -

PROCESSING IN TREATMENT WITH
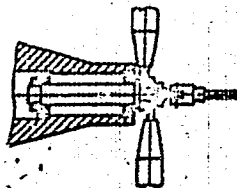
UNCLASSIFIED

1/3   025

TITLE--ON MECHANISMS OF DEVELOPMENT OF HYPERCORTICISM IN TREATMENT WITH CORTICOSTEROIDS OF PATIENTS WITH CERTAIN INFECTIOUS ALLERGIC DERMATOSES

AUTHOR-(03)-SKRIPKIN, YU.K., SHARAPOVA, G.YA., NARYZHNYUK, N.D.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK DERMATOLOGII I VENEROLOGII, 1970, NR 6, PP 12-16

DATE PUBLISHED------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SKIN DISEASE, ALLERGIC DISEASE, URINE, CHROMATOGRAPHIC ANALYSIS, CORTICOSTEROID, SYNDROME, DRUG TREATMENT

CONTROL MARKING--NO RESTRICTIONS

STEP NO--UR/0206/70/000/006/0012/0016

DOCUMENT CLASS--UNCLASSIFIED

PROC AME--3005/1551

UNCLASSIFIED

2/3   025
CIR: ACCESSION NO--AP0133304
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE CONTENT OF 17 CCS IN THE BLOOD
WAS DETERMINED BY SILBER PORTER'S METHOD MODIFIED BY N. A. YUDAEV AND
YU. A. PANKOV, IN THE URINEBY THE SAME METHOD MODIFIED BY M. A.
KREKHOVA, THE CONTENT OF INDIVIDUAL CORTICOSTEROID COMPOUNDS IN
SEPARATE FRACTIONS OF 17 OCS OF THE URINE WAS STUDIED BY PAPER
CHROMATOGRAPHY METHOD OF BUSH MODIFIED BY M. A. KREKHOVA. STUDIES WERE
CARRIED OUT IN 29 APPARENTLY NORMAL SUBJECTS (CONTROL GROUP) AND IN 42
PATIENTS WITH DERMATOSES IN THE ETIOPHATHOGENESIS OF WHICH A
CONSIDERABLE ROLE BELONGED TO THE FACTOR OF INFECTIOUS ALLERGY (LUPUS
ERYTHEMATOSUS, PSORIATIC ARTHRITIS, PEMPHIGUS VULGARIS). AMONG THE 42
PATIENTS 23 SHOWED MANIFESTATIONS OF KUSHING'S SYNDROME (GROUP 1), 8
SUBJECTS HAD BEEN TREATED WITH CORTICOSTEROIDS FOR A LONG TIME BUT
SHOWED NO MANIFESTATION OF MEDICINAL HYPERCORTICISM (GROUP 3); 11
PATIENTS HAD NOT BEEN TREATED WITH CORTICOSTEROID HORMONES (GROUP 2).
THE PATIENTS WITH DERMATOSES OF THE INFECTIOUS ALLERGIC GENESIS BOTH
PREVIOUSLY UNTREATED WITH CORTICOSTEROIDS AND EXAMINED IN THE PERIOD OF
TREATMENT WITH THESE HORMONES WERE CHARACTERIZED BY INCREASED EXCRETION
IN THE URINE OF UNCONJUGATED 17 OCS DUE TO RECEIVED DEXAMETHAZINE,
TRIAMSINOLONE OR PREDNISOLONE, AND REDUCED EXCRETION OF GLUCURONIDES
(DUE TO REDUCED EXCRETION OF ENDOGENOUS CORTICOSTEROIDS) MUCH MORE
MARKED IN PATIENTS WITH KUSHING'S SYNDROME MANIFESTATIONS.

UNCLASSIFIED

3/3   025
CIRC ACCESSION NO--AP0133304
ABSTRACT/EXTRACT--A COMPARISON OF THE RESULTS OF LOADING WITH CORTISONE
AND CORTISOLE OF PATIENTS WITH DERMATOSES IN WHOM TREATMENT WITH
CORTICOSTEROIDS HAD GIVEN NO COMPLICATION WITH THOSE IN WHOM THIS
THERAPY HAD BEEN ACCOMPANIED BY MANIFESTATIONS OF HYPERCORTICISM PERMITS
A CONCLUSION THAT THE LATTER SHOW DISORDERS OF INACTIVATION OF
BIOLOGICALLY ACTIVE CORTICOSTEROIDS.   FACILITY: KAFEDRA KOZHNYKH
BOLEZNEY II MOSKOVSKOGO MEDITSINSKOGO INSTITUTA IM. N. I. PIROGOVA I
BIOKHIMICHESKAYA LABORATORIYA.   FACILITY: MOSKOVSKOGO OBLASTNOGO
NAUCHNO ISSLED. KLINICHESKOGO INSTITUTA.

UNCLASSIFIED   PROCESSING DATE--30OCT70

1/2   014   TITLE--REACTION OF MOLYBDENUM OXYCHLORIDE WITH NATURAL TITANIUM COMPOUNDS

-U-

AUTHOR-(04)-YELISEYEV, S.S., GLUKOV, I.A., VOZHDAYEVA, YE.YE.,
NARZIKULOVA, R.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK. TADZH. SSR, 1970, 13,2, 33-6

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MOLYBDENUM COMPOUND, CHLORIDE, TITANIUM COMPOUND, CHEMICAL
REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0990   STEP NO--UR/0425/70/013/002/0033/0036

CIRC ACCESSION NO--AT0118155
                            UNCLASSIFIED

2/2   014
CIRC ACCESSION NO--AT0118155
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF POWD. ILMENITE
WITH MOOCL SUB4 IN A SEALED AMPULE ON HEATING IS FETIO SUB3 PLUS 3MOOCL
SUB4 EQUALS TICL SUB4 PLUS 3MO SUB2 CL SUB2 PLUS FECL SUB2. IN THE
UPPER PART OF THE AMPULE (COOLED WITH H SUB2 O) TICL SUB4, AND MOO SUB2
CL SUB2 CONDENSED. AT 140-220DEGREES THE AMT. OF FECL SUB4 AND TICL
SUB4 INCREASED RAPIDLY WITH THE TEMP. THE UNREACTED, DRY RESIDUE
DECREASED LINEARLY AS THE TEMP. INCREASED. IN THE REACTION TIO SUB2
PLUS 2MOCL SUB4 THE PRODUCT MO SUB2 CL SUB2 REMAINED IN THE RESIDUE.
THIS RETARDED THE REACTION, SO THAT BELOW 220DEGREES ONLY 27-30PERCENT
OF TIO SUB2 REACTED. FACILITY: INST. KHIM., DUSHANBE, USSR.

UNCLASSIFIED   PROCESSING DATE--23OCT70

1/2   028
TITLE--PROPERTIES OF COMPOUNDS FORMED BY MOOCL SUB4 WITH BENZENE AND
TOLUENE -U-
AUTHOR-(03)-GLUKHOV, I.A., YELISEYEV, S.S., NARZIKULOVA, R.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK TADZH. SSR 1970, 13(1), 32-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL STABILITY, MOLYBDENUM COMPOUND, BENZENE, TOLUENE,
THERMAL ANALYSIS, IR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED   STEP NO--UR/0425/70/013/001/0032/0035
PROXY REEL/FRAME--1997/1124

CIRC ACCESSION NO--AT0119978
UNCLASSIFIED

2/2   028
CIRC ACCESSION NO--AT0119978
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERMAL STABILITY AND HYDROLYSIS OF C SUB6 H SUB4 (MOOCL SUB3) SUB2 (I) AND MEC SUB6 H SUB4 MOOCL SUB3 (II) WERE INVESTIGATED BY DTA AND IR SPECTRA. TO PREP. I AND II MOOCL SUB4 WAS DISSOLVED IN BENZENE OR TOLUENE, AND EXCESS SOLVENT REMOVED BY MODERATE HEATING TO CONST. WT. AFTER HEATING AT 55ODEGREES IN VACUUM, NO CHANGE WAS OBSD. IN THE APPEARANCE AND ANAL. COMPN. OF I, BUT NEW IR BANDS CORRESPONDING TO BENZENE WERE OBSD. TWO STEP DECOMPN., AT 170 AND 264DEGREES, WAS FOUND BY DTA. II IS STABLE IN VACUUM UP TO 175DEGREES, DETA SHOWS AN ENDOTHERMAL EFFECT AT 162DEGREES. BOTH I AND II HYDROLYZE TO MOO SUB4 PRIME2NEGATIVE, CL PRIME NEGATIVE AND AN ORG. RESIDUE WITH IR BENZENE RING VIBRATIONS. BOTH I AND II AS WELL AS THEIR ORG. HYDROLYTIC PRODUCTS ARE AMORPHOUS TO X RAYS. IR BANDS ARE TABULATED AND COMPARED WITH THOSE OF RELATED COMPDS. FACILITY: INST. KHIM-- DUSHANBE, USSR.

UDC 547.944/945

USSR

NARZULLAYEV, A. S., YUNYSOV, M. S., YUNUSOV, S. YU., Order of the Red Banner of Labor, Institute of the Chemistry of Plant Substances of the Uzbek SSR Academy of Sciences

"Delphinium Dictyocarpum Alkaloids"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 4, 1972, pp 498-502

Abstract: A study was made of Delphinium dictyocarpum alkaloids. From the roots of the D. dictyocarpum gathered in the vicinity of Topolevka, Dzhungarskiy Alatau (flowering stage), methyllicaconitine, licoctonine and the bases II and III were isolated; by chloroform extraction of the above-ground part of the D. dictyocarpum gathered in the Koktal Highlands, Kuyandysay and Dzhungarskiy Alatau (budding stage) 0.58% of the total alkaloids were obtained from which methyllicaconitin, eldelin, eldelidine and a new alkaloid called dictyocarpine (I) $C_{26}H_{39}O_8N$ with a melting point of 210-212°, M 493 (mass spectrometrically were obtained. By comparing the nuclear magnetic resonance and mass spectra of dictyocarpine, its amino alcohol and diacetate with eldeline, eldelidine and eldeline acetate, the licoctonine skeleton was established for the I with a methoxyl group on the C_1, the c-methyl group

1/2

USSR

NARZULLAYEV, A. S., et al., Khimiya Prirodnykh Soyedinenly, No 4, 1972, pp 498-502

on C_4, acetoxyl group on C_6, methylenedioxy-group on C_7 and C_8 and hydroxyl groups on C_{10} and C_{13}. The position of one of the methoxyl groups was not determined. Studies of the mass and nuclear magnetic resonance spectra of base II and its diacetate resulted in the following formula for II:

$$C_{19}H_{21}(>N-CH_2-CH_3)\ (OH)_4\ (OCH_3)_3.$$

2/2
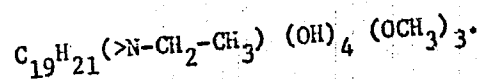
UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--STUDY OF THE FAILURE OF TRANSPARENT POLYMERIC MATERIALS (BLOCKS)
UNDER THE ACTION OF LASER BEAMS IN THE FREE GENERATION MODE -U-
AUTHOR-(03)-SULTANOV, M.A., NARZULLAYEV, B.N, URUNOV, V.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK TADZHIKSKOI SSR, DOKLADY, VOL. 13, NO. 3, 1970, P.
12-16
DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--MATERIAL FAILURE, POLYMETHYLMETHACRYLATE, QUARTZ, POLYSTYRENE
RESIN, GLASS, NEODYMIUM GLASS, LASER BEAM, SHOCK WAVE, EXPLOSION EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1106   STEP NO--UR/0425/70/013/003/0012/0016

CIRC ACCESSION NO--AT0119964
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0119964
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   STUDY OF THE MECHANISM OF FAILURE
OF TRANSPARENT POLYMERIC MATERIALS (POLYMETHYL METHACRYLATE, QUARTZ,
GLASS, AND POLYSTYRENE) UNDER THE ACTION OF NEODYMIUM GLASS LASER
RADIATION IN THE FREE GENERATION MODE.   THE CHANGES IN THE NATURE OF THE
FAILURE PROCESS IN THESE MATERIALS ARE DETERMINED AS A FUNCTION OF THE
FOCAL LENGTH OF THE LENSES, THE OUTPUT POWER, AND THE SPOT WHERE THE
LASER BEAM IS FOCUSED IN THE MATERIAL.   A GENERAL PICTURE IS GIVEN OF
THE FAILURE OF POLYMETHYL METHACRYLATE AND POLYSTYRENE UNDER THE ACTION
OF LASER BEAMS IN THE FREE GENERATION MODE.   IT IS SHOWN THAT THE
PASSAGE OF A LASER BEAM THROUGH ONE OF THESE MATERIALS CAUSES THE
MATERIAL TO HEAT UP RAPIDLY AT THE FOCUSING POINT AND TO PASS INTO THE
LIQUID STATE, THUS FORMING A PLASMA WHICH EXPANDS AT A LARGE VELOCITY.
THIS PHENOMENON LEADS TO A POINT, INSTANTANEOUS, AND HIGH POWER
EXPLOSION ACCOMPANIED BY THE FORMATION OF A SHOCK WAVE WHICH PROPAGATES
AT A HYPERSONIC VELOCITY.   FACILITY: TADZHIKSKII GOSUDARSTVENNYI
UNIVERSITET, DYUSHAMBE, TADZHIK SSR.

UNCLASSIFIED

USSR

UDC 576.858.5.097.2.077.3

CHEPULIS, G.-K. S., ZHDANOV, V. M., NAS, I., CHERBA, I., and ROZHA, K.,
Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences
USSR, Moscow, Institute of Microbiology, Medical University, Hungarian
People's Republic, Budapest, and Microbiological Scientific Research Group,
Academy of Sciences Hungarian People's Republic

"Detection of Cellular Antigens in Myxoviruses and Paramyxociruses by the
Immunodiffusion Method"

Abstract: Several types of immunodiffusion methods which so far had been
used only in the study of adenoviruses, plant viruses, and a few other
viruses were used to study the antigenic composition of myxoviruses and
paramyxoviruses. The methods used were double gel diffusion, immuno-
electrophoresis, and immuno-osmophoresis. The viruses included in the study
were Group A Hong Kong influenza virus, fowl plague virus (strain Weybridge),
Group A influenza virus (strain WSN) and A_2 virus (strain England/64 and
Hong Kong/68) and Newcastle disease virus (strain Tomlinskiy and Hertford-
shire) and Sendai virus (strain No 960). The viruses were cultured on chick
embryo cultures and primary cultures of chick fibroblasts. The viruses were

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USSR

CHEPULIS, G. -K., et al., Voprosy Virusologii, No 1, Jan/Feb 71, pp 62-70

purified by column chromatography with a special cellulose fiber material, andconcentrated by dialysis of purified preparations against polyethylene glycol of molecular weight 6,000. S^- and V^- antigens were obtained by washing the virus preparations with ether. Virus antigens were separated by adsorption and elution. Virus-specific antigens were detected and also several cellular antigens included in the composition of virus particles. Three of these cellular antigens were identified as group A, species-specific, and Forsman antigens. It was established that the cellular antigens are located not only at the surface of the virus particles, but also in the deeper structures of the virus particles. Also, experimental data indicate that cellular antigens are not simply mechanically admixed impurities; rather, they are essential components of the virus particles.

2/2

UDC 547.341

USSR

NASAKIN, O. Ye., KORMACHEV, V. V., MIKHAYLOV, Z. I., and KUKHTIN, V. A.,
Chuvash State University imeni I. N. Ul'yanov

"Reaction of Di(β-chloroethyl) Vinylphosphonate With Trialkylsilyl-alkanethiols"

Abstract: Di(β-chloroethyl) vinylphosphonate reacts easily with tri-
alkylsilylalkanethiols under UV light for 18-20 hrs at 30-35° yielding
di(β-chloroethyl) β-(trialkylsilylalkylthio)ethylphosphonates, as a
result of an anti-Markovnikov's addition.

1/1

- 40 -

USSR

UDC   621.378.329

BOGDANKEVICH, C. V., KOROLEV, S. V., NASEDKIN, A. A., OLIKHOV, I. M.,
PETROV, D. M.

"Use of a Microwave-Modulated Electron Beam for Semiconductor Laser Pumping"

Abstract: SHF modulation of semiconductor laser emission is achieved by
using a microwave-modulated electron beam for laser pumping. A mode of
emission is obtained in which multiple division of the pulse repetition
frequency with respect to the frequency of the modulating SHF signal is
attained. The authors thank V. A. Dorofeyev and G. N. Yanonis for as-
sistance with the work. Three figures, bibliography of six titles.

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PROCESSING DATE--04DEC70

UNCLASSIFIED

1/2   012
TITLE--DESIGN CHARACTERISTICS OF PS72M MOTORS -U-

AUTHOR-(02)-MAVROMATI, G.S., NASEDKIN, L.P.

COUNTRY OF INFO--USSR

SOURCE--IZV. VUZ. SSSR ELEKTROMEKH. (USSR), NO. 2, P. 170-2 (FEB. 1970)

DATE PUBLISHED----FEB70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRIC MOTOR, DESIGN HANDBOOK, SPEED REGULATOR,
ARMATURE/(U)PS72M ELECTRIC MOTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0313   STEP NO--UR/0144/70/000/002/0170/0172

CIRC ACCESSION NO--AP0137418
UNCLASSIFIED

2/2   012
CIRC ACCESSION NO--AP0137418
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPEED STABILISATION IN PS72M
MOTORS IS ACHIEVED BY VARYING THE EXCITATION. IN THIS CASE, THE
DISTORTION OF THE RESULTANT FIELD IN THE AIR GAP, GOVERNED BY THE
LATERAL REACTION OF THE ARMATURE, IS RELATIVELY HIGH WITH CONSEQUENT
DEGRADATION OF THE SWITCHING CAPACITY OF THE MACHINE. FOR THIS REASON,
IN THE DESIGN OF SUCH MOTORS IT IS NECESSARY TO SELECT A LINEAR LOAD, ON
THE BASIS OF COMMUTATION REQUIREMENTS AND NOT, AS IS USUAL, ON THE BASIS
OF THERMAL EXCHANGE REQUIREMENTS WHEN USING INCREASED HEAT RESISTANT
INSULATION.

UNCLASSIFIED

USSR

UDC: 669.783

GLINOV, S. V. and NASHEL'SKIY, A. Ya.

"Coefficients of Admixture Distribution in Germanium Crystals"

Moscow, Tsvetnyye Metally, No 9, Sep 73, pp 34-35

Abstract: The authors make the equilibrium factors more precise for In, Cu, Al, and As admixtures in germanium. Rate dependences were established for the coefficients of the admixture distributions for indium, copper, aluminum, and arsenic in germanium. The values for the equilibrium coefficients of the admixture distributions for indium and copper are $9.5 \cdot 10^{-4}$ and $1 \cdot 10^{-5}$ respectively. This dependence is also shown for gallium.

1/1

NASHEL'SKIY, A. Ya.

III-13a. CALCULATION OF THE PROGRAM FOR VARIATION OF THE GROWTH AND ROTATION RATES OF A SINGLE CRYSTAL TO OBTAIN UNIFORM DISTRIBUTION OF THE ADMIXTURE WITH RESPECT TO ITS LENGTH

[Article by G. V. Gulov, A. Ya. Nashel'skiy, Moscow: Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 30]

The joint variation of the growth rate f and the rotation rate ω of a single crystal permits a significant increase in the yield of its uniform part. The initial data for constructing the program for variation of f and ω with the process time t are the graphs of the effective distribution coefficient k as a function of f for different values of ω. In them, in accordance with the specific conditions of the process, the program range is isolated which is limited by the maximum and minimum values of f and ω. Then the required sequence of variation of f and ω is noted.

The program for variation of f is calculated by the procedure discussed in reference [1]. For the case of programming the process only with respect to ω, the program is calculated by the graph of the initial data, assuming a proportion of the program is calculated by the graph of the variation of k, portion of the crystallized materials which is proportional to the variation of k, then programming the process under the conditions of simultaneous variation of f and ω, the values of ω are found directly from the graph of the initial data for the corresponding values of f.

BIBLIOGRAPHY

S. V. Gulov, A. Ya. Nashel'skiy, A. Ya. Vol'pyan, Izvestiya metally (Nonferrous Metals), No 10, 36, 1970.

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SPRS
5920S
n. 73

2

III-136. PROBLEM OF DETERMINING THE GROWTH RATE OF SINGLE CRYSTALS UNIFORMLY ALLOYED WITH RESPECT TO LENGTH OF THE VOLATILE ADMIXTURE

On the basis of the material balance of consumption of the volatile admixture from the melt into the growing crystal and arrival of it from the vapor phase into the melt during the process of its crystallization by the method of zonal equalization, an equation was derived which permits determination of the growth conditions of the crystals with uniform concentration with respect to length of the alloying admixture at a constant crystallization rate:

$$f = N_o \cdot f \cdot \frac{S_1}{P} S.$$

where f is the growth rate of the crystal, cm/sec; dt_1, is the interaction constant of the admixture in the vapor phase with the melt, cm/sec; P is the free surface of the melt, cm^2; S is the area of the crystal cross section, cm^2; C$_p$ is the equilibrium (for f = 0) concentration of the admixture in the melt for the given vapor pressure above the melt, atoms/cm^3; C is the concentration of the admixture in the melt, atoms/cm^3; N is the concentration of the admixture in the grown crystal, atoms/cm^3.

The equation which permits determination of the growth conditions of the crystal with uniform concentration of the alloying admixture with respect to length in the Czochralski process was obtained analogously for a constant crystallization rate:

$$f = d t_1 \cdot \frac{P}{S} \cdot \frac{C_p - C}{N}$$

where K is the effective distribution coefficient of the admixture. The analysis of this equation demonstrates that when the process takes place in a vacuum (at K < 1 and C$_p$ = 0) it assumes the form of the equation previously derived by V. N. Romanenko [1].

BIBLIOGRAPHY

1. V. N. Romanenko, Poluchentye odnorodnykh poluprovodnikovykh kristallov (Obtaining Uniform Semiconductor Crystals), Metallurgiya, Moscow, 1966.

- 38 -

UDC 621.315.592

USSR

NASHEL'SKIY, A. YA.

"Contemporary Methods Of Synthesis And Growth Of Single Crystals Of Decomposing Semiconductor Compounds"

V sb. Protsessy sinteza i rosta kristallov i plenok poluprovodn.materialov (Processes Of Synthesis And Growth Of Crystals And Films Of Semiconductor Materials--Collection Of Works), Novosibirsk, "Nauka," 1971, pp 17-35 (from RZh:Elektronika i yeye primeneniye, No 4, April 1972, Abstract No 4B96)

Translation: Using compounds of Type $A^{III}B^V$ and $A^{II}B^{VI}$ as an example, the principal physico-chemical properties are considered which determine the technology of the synthesis and growth of single-crystal binary semiconductor compounds. The crystallization is studied of melts of decomposing semiconductor compounds of stoichiometric and non-stoichiometric composition. Problems are considered of the synthesis and crystallization of decomposing semiconductor compounds in the vapor phase with the use of gas-transport reactions. The principal trends in the growth during the next years of the technology of semiconductor compounds are discussed.

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- 83 -

UDC 669.71.053.4

USSR

FISHER, A. YA., NASHEL'SKIY, A. YA., Scientific Editors

Moscow, Metallurgiya Tsvetnykh i Redkikh Metallov, 1970
(Metallurgy of Non-Ferrous and Rare Metals, 1970), 1971, 124 pp

Translation of Annotation: Data are reported on the development
of aluminum production in foreign countries in recent years and
results are given on experimental work in alumina production, the
technology of the electrolytic production of aluminum, and
aluminum refining. The second article provides information on
1969-1970 work on the technology of the growing volumetric single
crystals and epitaxial films of semiconductor solid solutions.
The most important trends in the application of single crystal
solid solutions are analyzed and their effect on the development
of new production methods is discussed. This booklet will be of
interest to scientific workers and the technical-engineering staff
of scientific research institutes and enterprises of non-ferrous
metallurgy and the electronic industry.

Translation of Table of Contents:

Metallurgy of non-ferrous and rare metals.
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USSR

FISHER, A. YA., et al, Metallurgiya Tsvetnykh i Redkikh
Metallov, 1970, 1971, 124 pp

2/2

USSR   UDC 548.55

VOL'PYAN, A. YE., GNILOV, S. V., NASHEL'SKIY, A. YA., State Scientific
Research and Planning Institute of Rare Metals

"Design of a Program for Growing Single Crystals by the Method of Zonal
Equalization With a Uniform Impurity Distribution Along the Length"

Abstract: Growing of alloyed single crystals by the method of zonal equaliza-
tion is widely used for producing many semiconductors. The essence of the
method is that an ingot of pure material has a calculated quantity of
impurity added to it as the ingot makes its one and only melting pass. This
report describes a simple and covenient method of programming the rate of
propagation in the process of zonal equalization. The authors present
examples of vaporization of alloying impurities and alloying from the gas
phase and give examples of programs for growing crystals of germanium alloyed
with phosphorus and antimony. In the examined cases, transition from zonal
equalization with vaporization of an impurity to zonal equalization with a
constant total amount of impurity in the ingot, and, further, to the zonal
process of using an alloying mixture (impurity) from the gas phase lowers
effectiveness of equalization for programmed change of the rate of movement
of the melted zone. Four figures, 6 bibliographic references.
1/1

USSR   UDC 548.55

GNILOV, S. N., NASHEL'SKIY, A. YA., and VOL'PYAN, A. YE., State Scientific
Research and Planning Institute of Rare Metals

"Programming the Rate of Growing Alloyed Single Crystals With a Constant
Degree of Equilization"

Abstract: To obtain alloyed single crystals of semiconductor materials it is
necessary to solve the problem of growing crystals alloyed simultaneously
with two impurities, ordinarily the donors and acceptors, in order to pro-
duce a constant charge carrier concentration along the length of the crystal.
This concentration ratio is

$$a = \overline{C}_d(g)/\overline{C}_a(g) \,,$$

where $\overline{C}_g(g)$ and $\overline{C}_a(g)$ are the concentrations of non-volatile donor and
acceptor impurities in the crystal and g is the fraction of crystallized
volume carrying the name of the degree of compensation. The problem can be
solved by programming the change in crystal growth rate. This article deals
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USSR

GNILOV, S. N., et al., Neorganicheskiye Materialy, Vol 7, No 8, Aug 71, pp 1297-1300

with the development of a method for programming the change in crystal growth rate by taking into account coefficients of distribution of phosphorus and gallium in germanium, calculating the maximum growth rate f, and then setting up the identities and equations which produce values which can then be analyzed and evaluated. Three figures, 1 table, 2 bibliographic references.

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UDC 669.783

USSR

GNILOV, S. V., NASHEL'SKIY, A. Ya., and VOL'PYAN, A. Ye.

"Establishing a Program for Single Crystal Growth From a Melt"

Moscow, Tsvetnyye Metally, No 10, Oct 70, pp 56-57

Abstract: The growing of single crystals with a uniform distribution of impu-
rities and consequently, physical properties along the length, is one of the
most important problems in the technology of pure substances and semiconductors.
A procedure is suggested for establishing a program for the variation of the
single-crystal growth-process parameters by the Bridgeman and Chikhral'skiy
methods. A differential equation for the distribution coefficient variation
in the process of single crystal growth is derived, from which the program
equation is constructed. The determination of the program for germanium
single-crystal growth rate variation with a uniform distribution of phosphorus
admixtures along its length is considered as an example, and the results are
presented in graphs.

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AA0040703   N   Nashel'skiy jur 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

240681 OBSERVATION OF HIGH-TEMPERATURE PROCESSES,
e.g. in equipment for growing single
crystals of semi-conductor compounds containing a
volatile component, is improved by eliminating the
effect of convective gas flows on the observations.
In the case of hermetically-sealed vessels made of
opaque material, with an optical quartz window in
a branch pipe, a heated tube is installed in the
branch pipe and sealed at the ends with sheets of
optically-transparent material. Heating of
materials to above 500°C in the vessel is possible
without interference to observation.
2.8.67 as 1177543/22-1. L.YA.KROL' et ali. STATE
SCIENTIFIC RES. & DES. INST. OF THE RARE-METALS IND.
(11.9.69) Bul 13/1.4.69. Class 12g. Int.Cl.B 01j.

19750333

AA0040703

AUTHORS: Krol', L. Ya.; Matveyev, V. S.; Nashel'skiy, A. Ya.;
           Kuz'min, V. N.; and Dmitriyev, G. D.

           Gosudarstvennyy Nauchno - Issledovatel'skiy i Proyektnyy
           Institut Redkometallicheskoy Promyshlennosti

19750334

USSR   UDC 546.681'181.1:541.66

KUZ'MIN, V. N., NASHEL'SKIY, A. YA., Giredmet /State Scientific
Research and Planning Institute of Rare Metals/

"Melting Point of Gallium Phosphide"

Moscow, Neorganicheskiye Materialy, Vol 6, No 5, May 70, p 984

Abstract: The melting point of GaP with stoichiometric composi-
tion was setermined to be 1503+8°C. After the alloy was prepared
it was cut into sections and inspected. Nonstoichiometric com-
position material showed either droplets of free gallium or
gaseous cracks due to an excess of phosphorus and overheating.
Material of accurate stoichiometric composition was free of these
defects and transmitted light.

1/1

USSR   UDC 621.315.592

NASHEL'SKIY, YA.M., GRACHEV, V.M.

"New Preparation Of Decomposing Semiconductor Compounds"

V sb. Elektronika i yeye primeneniye (Electronics And Its Applications—Collection
Of Works), Moscow, Izd-vo VINITI, 1971, pp 247-265

Abstract: The paper describes methods and apparatus for preparation of the
so-called decomposing semiconductor compounds and their solid solutions, to
which the widely known compounds of Type $A^{III} B^{V}$ and $A^{II} B^{VI}$, silicon carbide
and also numerous triple semiconductor phases (compounds and solid solutions)
are related. A detailed scheme is presented of a high-pressure apparatus for
synthesis and growth of single crystals of cadmium sulfide and zinc. The
design is shown of: (1) A high-pressure device for growth of gallium phosphide
crystals by the horizontal zone melting method; and (2) A high-pressure device
for growth of gallium phosphide crystals by the Czochralski method from under
a layer of covering flux. 4 fig. 54 ref.

1/1

"Generalized Theory of an Expanded Method for Calculating Complex Configu-
rations of Atomic Electrons"

Translation: A general theory of an expanded method for calculating atomic
structures is given in which the use of radial orbitals based on a number
equal to the number of electrons in the atom is used. Rules are given from
the transition from the ordinary method to the expanded method in the theory
of complex configurations. These rules consist of certain algorithms by
which the radial integrals of the ordinary method are replaced by the same
integrals of the expanded method. The given rules cover the overlapping
integral and matrix elements of the operators connecting the different
configurations. Authors abstract.

1/1

USSR   UDC: 539.182

YUTSIS, A. P., NASHLENAS, E. P., and ZHVIRBLIS, P. S.

"Generalizing the Theory of the Extended Method for Computing
Complex Atomic Electron Configurations"

Abstract: Use of the extended method of computing complex atomic
configurations involves the use of radial orbitals whose number
is equal to that of equivalent shell electrons connected with the
use of nonorthogonal radial orbitals. The purpose of this paper
is to broaden the theory to cover the case in which the number of
radial orbitals used is equal to the number of electrons in the
configuration. For this purpose, the concept of a distribution
matrix for a combination of single-electron coordinates between
the shells is used; such a matrix is convenient for constructing
phase multipliers for the wave function as well as in the expres-
sion for the matrix elements of the operators for any quantity.
A method for setting up the antisymmetrical wave functions of in-
dividual shells is explained, and a rule for obtaining an expres-
sion for the overlapping integral and for the matrix elements of
one- and two-electron operators is presented. The authors are

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USSR

YUTSIS, A. P., et al, Litovskiy Fizicheskiy Sbornik, vol 12, No 2, 1972, pp 201-210

associated with the V. Kapsukas State University at Vil'nyus and with the Lithuanian Institute of Physics and Mathematics.

2/2

USSR

UDC: 681.3

ZHAK, D., LUKINA, V., NASHLYUNAS, R.

"Experiment in Use of the 'RUTA-701' Device in the System of the Soviet Central Statistical Administration, and Calculations of the Effectiveness of its Use"

V sb. Elektronno-vychisl. tekhn. i programmir. (Computer Technology and Programming--collection of works), vyp. 3, Moscow, "Statistika", 1970, pp 39-49 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V699)

Translation: A description is given of the first experiment in using the "RUTA-701" reader in the system of the Soviet Central Statistical Administration for automatic readout of normalized handwritten symbols from blanks containing statistical information. Calculations are presented on the economic effectiveness of using this device. Authors' abstract.

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3

USSR   UDC   621.373:530.145.6

BOGDANKEVICH, O. V., ZVEREV, M. M., MESTVIRISHVILI, A. N., NASIBOV.
A. S., PECHENOV, A. N., SVINENKOV, A. I., FEDOSEYEV, K. P.

"A High-Power Semiconductor Maser With Electron Beam Pumping"

Translation: To increase the power of a semiconductor maser with elec-
tron beam pumping, the authors study multielement structures of gallium
arsenide and cadmium sulfide. An emission power of 1.5 MW is achieved
when a semiconductor maser on gallium arsenide is excited by an electron
beam with an energy of 300 keV and a current of 300 A. Two illustra-
tions, bibliography of five titles.

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3

USSR   UDC   621.378.35

BOGDANKEVICH, O. V., ZVEREV, M. M., MESTVIRISHVILI, A. N., NASIBOV, A. S., PECHENOV, A. N., SVINENKOV, A. I., FEDOSEYEV, K. P.

"A High-Power Semiconductor Laser With Electron-Beam Pumping"

Moscow, Kvantovaya Elektronika, No 2, 1971, pp 92-93

Abstract: Multiple-element structures of gallium arsenide and cadmium sulfide are studied for the purpose of increasing the power of a semiconductor laser with electron-beam pumping. An emission power of 1.5 MW is achieved when a gallium arsenide semiconductor laser is stimulated by a beam of 300 keV electrons at 300 A. Two figures, bibliography of five titles.

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USSR

UDC   621.373.029.7.004.14:681.3

BOGDANKEVICH, O. V., NASIBOV, A. S., NOVIKOV, A. A., PECHENOV, A. N.,
FEDOROV, V. B., TSVETKOV, V. V.

"Some Possibilities of Applying a Semiconductor Laser with Electron Excitation
in Computers"

Moscow, Radiotekhnika i Elektronika, Vol XVI, No 5, May 1971, pp 824-828

Abstract: A study is made of the requirements on a cathode ray tube based on
a semiconductor laser with electron excitation beginning with the problems of
creating prospective optoelectronic memories. Experimental and theoretical
results confirming the possibility of satisfying these requirements are pre-
sented.

The threshold current density is plotted as a function of the electron
energy for various sizes of the excited domain d and reflection coefficients
of the mirrors. With a beam energy of 100 kiloelectron volts and a current
density of 10 amps/cm^2 from a cell 210 microns in diameter, the output power
was 5 watts, and the conversion efficiency was 1.5 percent. Since the pulse
length of the electrons in the beam was 10^{-7} seconds, the radiation energy was
$5 \cdot 10^{-7}$ joules. Consequently, in order to obtain the radiation energy of

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BOGDANKEVICH, O. V., et al., Radiotekhnika i Elektronika, Vol XVI, No 5, May 1971, pp 824-828

10^{-7} joules required to insure a read rate of $B = 10^8$ bits/second, under all other equal conditions, the size of the spot on the laser screen of the cathode ray tube has to be about 100 microns. The pulse power of the radiation will be 1 watt and the mean power, 10^{-2} watts, and a screen with 10^5 positions will be about 40 × 40 mm. A screen spot size up to 300 microns is required to insure a read rate of 10^9 bits/second.

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USSR

BASOV, N. G., BOGDANKEVICH, O. V., NASIBOV, A. S.

UDC 631.486.843:621.375.8

"Cathode Ray Tube"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 16, 8 May 70, p 57, Patent No 270100, Filed 20 Feb 67

Translation: 1. This Author's Certificate introduces a cathode ray tube which is in the form of an evacuated bulb containing an electron gun with an electron beam control system and a converter for converting the electron beam energy to light energy. The tube is distinguished by the fact that to increase directivity and brightness of glow of the image, the converter is executed in the form of a monocrystalline film with smooth surfaces. The film made of semiconductor material is excited by the electron beam and constitutes an active laser element.

     2. A second cathode ray tube like in item 1 is introduced. It is distinguished by the fact that to improve the directivity of glow of the image, the semiconductor film is attached to an optically transparent plane-parallel plate which, together with the film, forms an optical resonator.

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Soviet Inventions Illustrated, Section II Electrical, Derwent,

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243911 HYDRAULIC POWERMETER contains a flexible
sensitive element, transformer-hydraulic
collector of the measured power and an automatic
recorder. The hydraulic collector is made up of
separate membrane chambers connected with each
other co-axially and connected to a pipe line in
any combination of pipes.
       The device contains a hydraulic collector 1
in the form of separate chambers 2 co-axially join-
ed and transformer 3 of power in the form of a
hydraulic dynamometer, a flexible sensitive element
4 spiral and a self-recording device 5, recording
a diagram of load-time.

1.4.67 as 1146245/18-10.S.B.TER-AKOPOV et al.
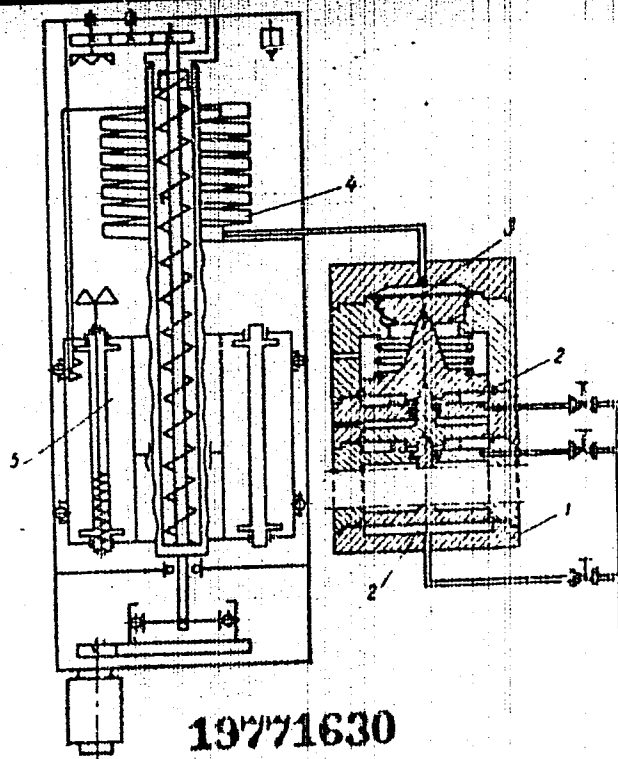(26.9.69) Bul 17/14.5.69. Class 42k. Int.Cl.G 01 L.

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AUTHORS: Ter-Akopov, S. B.; Avad'yev, B. V.; Nasibov, Sh. G.

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USSR

NASIBOVI, Candidate of Technical Sciences

"Laser Television Set"

Minsk, Sovetskaya Belorussiya, 30 Nov 73, p 4

Abstract: The first successful experiments using a laser kinescope in place
of the conventional one for color television have been conducted at the Lebedev
Physics Institute of the USSR. The new technique was used without changing
the layout of the television set. As in conventional television, a controlled
electron beam, with a thickness of 10 microns, scans a screen line by line,
producing a luminous image. In this case, the screen is a specially grown,
thin, single-crystal semiconductor plate whose surfaces form an optical reso-
nator.

Research has shown that the emission is so bright that an image one
square centimeter in area may be projected onto an external screen with an
area of several square meters (such as that of a movie theater). By using laser
plates with different semiconductor materials, one can obtain an emission in
any color and, by combining the emission of three laser screens (red, green,
and blue), obtain a color image.

Experiments have also been carried out for obtaining three-dimensional
television, or holography. One application of this would be the fast repro-
duction of information recorded very compactly on photographic film in the form
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NASIBOVI, Sovetskaya Belorussiya, 30 Nov 73, p 4

of microholograms. By means of this technique a complete movie could be recorded on only a few meters of film.

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UDC: 622.316.722.1

USSR

BELOGORSKIY, A. L., NASIBULLIN, I. A., ROZHENTSEV, Ye. D.

"A Switching Stabilizer"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 11, Apr 72, Author's Certificate No 333661, Division H, filed 20 Jul 70,
published 21 Mar 72, p217

Translation: This Author's Certificate introduces a switching stabilizer
which contains a reference voltage source, and measuring and control ele-
ments. As a distinguishing feature of the patent, in order to automate
control of the change in output voltage in accordance with a given program,
the base of the transistor in the measuring element is connected to a re-
sistive code-to-voltage converter, which is connected in turn through con-
trolling switches in the program unit to the tie-point between a resistor
and stabilitron (which is the reference voltage source). The resistor is
connected to the collector of the transistor in the regulating element,
and the stabilitron is connected through a resistive divider to the base
of this same transistor, and to the anode of a thyristor in the measuring
element.

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BELOGORSKIY, A. L., USSR Author's Certificate No 333661, Division H

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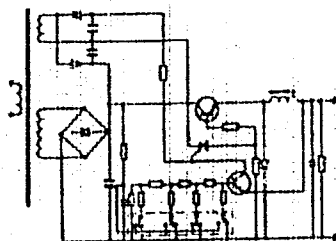
USSR   UDC 591.105, 612.018, 577.391

NASIRAV, R. A.

"The Dependence of Optical of Cardiac Mitochondria on the Functional State of the Hypothalamvi-Hypophysis-Adrenal System in Irradiated Animals"

Minsk, Vesti Akademiyi Nauk BSSR, Seryya biyalagicheskikh Nauk, No 1, 1970, pp 91-95

Abstract: Five groups of guinea pigs were used. Group one received 13.5 r of penetrating neutrons; group two received 40 r of x-rays groups three, four and five were adrenalectomized, (group four received hydrocortisone and group five hydrocortisone and adrenalin). The last three groups were treated similarly to the first two groups. All groups were studied 2 and 24 hours after irradiation. The mitochondria of cardiac muscle were scientifically isolated and studied spectrophotometrically. Experimental results show almost no change in groups one and two. In adrenalectomized animals (group three there was a marked dispersion of rays 2 and 24 hours after irradiation. In group four receiving hydrocortisone, a pronounced drop was

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NASIRAW, R. A., Minsk, Vesti Akademiyi Nauk BSSR, No 1, 1970,
pp 91-95

in optical density was noted 2 hours after x-ray irradiation, and
none after neutron irradiation. In group five receiving both hydro-
cortisone and adrenalin, there was very little change from the
norms 2 and 24 hours after irradiation. These data prove that
the optical density of mitochondria of cardiac muscle is dependent
on the hypothalamus-hypophysis-adrenal system in irradiated animals.

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AUTHOR-(02)-ASADOV, YU.G., NASIROV, V.I.

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